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contraction of the mantle musculature the water is expelled through the posterior opening, thus driving the body of the animal forwards. By a succession of such jets the animal may swim some feet before settling.

P.

Ear Bones.—The ear bones of vertebrates have undergone a careful comparative examination at the hands of J. S. Kingsley.¹ In urodeles and cecilians, where no tympanum exists, a stapes, which develops independently of the otic capsule, is the only element present. In the anura the space between the otic capsule and the tympanum is spanned by three elements, the stapes, the pseudoperculum, and the extracolumella, which collectively constitute the so-called columella of this group. It is important to observe that the intermediate piece, the pseudoperculum, is developed from the posterior wall of the tympanic cavity. In lizards the chain of ear bones consists of only two, the stapes and the extracolumella. Of the three ear bones in the pig the malleus is composed of three parts, a manubrium corresponding to the extracolumella of lower forms, a body representing the articulare, and a membrane bone forming at least a part of the *processus gracilis*. The stapes of the pig is homologous with the stapes of lower vertebrates. The incus which unites malleus and stapes cannot correspond to the pseudoperculum of lower vertebrates, because it develops from the anterior instead of the posterior wall of the tympanic cavity. As this position is that occupied by the quadrate, the incus is believed to be homologous with this bone. It will thus be seen that while the distal and proximal ends of the chain of ear bones in mammals and in lower vertebrates are homologous, the intermediate members are not, being the posterior pseudoperculum in amphibia and the anterior incus (quadrate) in mammals.

P.

Otocysts of the Heteropods.—Ilyin² has experimented upon *Carinaria* and *Pterotrachea* with the view of determining the physiological value of the otocysts in these mollusks. The otocysts are apparently stimulated not as auditory organs but as tactile organs. When both organs are removed, the animal is unable to keep itself correctly oriented and swims in circles. The presence or absence

¹ Kingsley, J. S. *The Ossicula Auditus*, *Tufts College Studies*, No. 6. (Scientific Series.) 1900.

² Ilyin, P. Das Gehörbläschen als Gleichgewichtsorgan bei den *Pterotracheidæ*, *Centralbl. f. Phys.*, Bd. xiii, pp. 691–694, 1900.